Space Weather Forecast

Issued on Saturday, 27 January 2024 at 01:17 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Chance of G1 Minor Storms day 4 (30 Jan) from onset of coronal hole fast winds. Chance of isolated Moderate flares.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Low with only common-class flares observed from the six sunspot regions on the disc, the largest flares just below the M-class level and both from the complex sunspot now approaching the southwest limb. This has been the most active region on the disc, but has been declining, and along another nearby spot will soon move over the horizon onto the far-side. A longitudinally wide region on the northwest-disc has also been simplifying, but maintains some moderate magnetic complexity despite its lack of flaring. The most notable growth has been in a further region on the southwest, which consists of three spots small buy distinct spots, and ongoing slow growth, but maintains a simple bipolar magnetic structure. Any other spots have remained small and simple.

No Earth-directed coronal mass ejections (CMEs) were observed.

Solar Wind / Geomagnetic Activity: Solar winds have been inconclusive for any CME notable arrivals, but have seen very weak speed increases, the first at around 26/0900 UTC, then weakly again at 26/1240 UTC and then more notably at 26/1955 UTC. These could have been due to very weak and glancing CMEs, with observed speeds rising from background, below 400 km/s, to be slightly elevated at 450-500km/s. Interplanetary magnetic field (IMF) was mainly weak did rise to give spells of brief moderate values between 26/0800-1745 UTC. The north-south component remained mostly weak, but did have a brief spell of moderate negative values 26/1200-1300 UTC. Geomagnetic activity was Quiet throughout (Kp 0-2).

Energetic Particles / Solar Radiation: The count rate of energetic particles (High energy protons) remained at background with no solar radiation storms occurring.

Four-Day Space Weather Forecast Summary

Solar Activity: Low activity expected, but with a chance of isolated Moderate class flares.

Solar Wind / Geomagnetic Activity: Any previously expected CMEs have now likely passed or missed, however a couple of further CMEs from 23-24 Jan that are expected to miss just ahead of Earth cannot be ruled out for giving further very slight enhancement early on day 1 (27 Jan). Otherwise winds are expected to ease towards background days 1-3 (27-29 Jan) before the onset of the next coronal hole sourced fast wind enhancement expected day 4 (30 Jan). Slightly elevated winds are expected to develop, with the potential for a spell of increased geomagnetic activity during the onset. Ongoing chance of an Unsettled to Active spell at first day 1 (27 Jan) but easing to be mainly Quiet. Increasing again to Unsettled to Active with any fast wind onset, most likely day 4 (30 Jan), with a chance of G1 Minor Storm intervals.

Energetic Particles / Solar Radiation: The count rate of energetic particles (High energy protons) is forecast to persist at background with no solar radiation storms occurring. There is a very slight chance of this flux rising above background if any notable flares occur from any of the sunspot near the west limb.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	5	1	5	40
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	40	30	35	40
Very Active	R3 to R5 X	No	2	2	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	5	5	2	2
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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